# Alternative-Fuel and Advanced-Technology Vehicles: How Many and How Soon?

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2nd National Conference on Transportation Finance

August 22, 2000



## Impact of Advanced Technologies on Gasoline Consumption Depends on

- Unit vehicle sales
- Market penetration
- Fleet dynamics
  - turnover
  - utilization
  - deterioration
- Relative fuel efficiency

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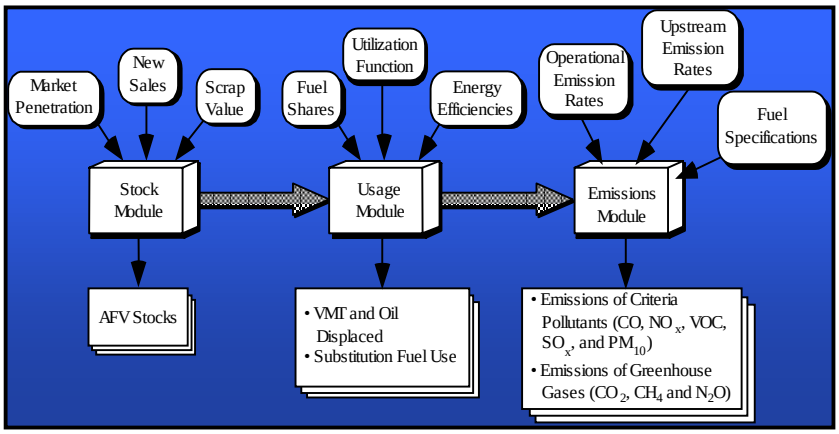
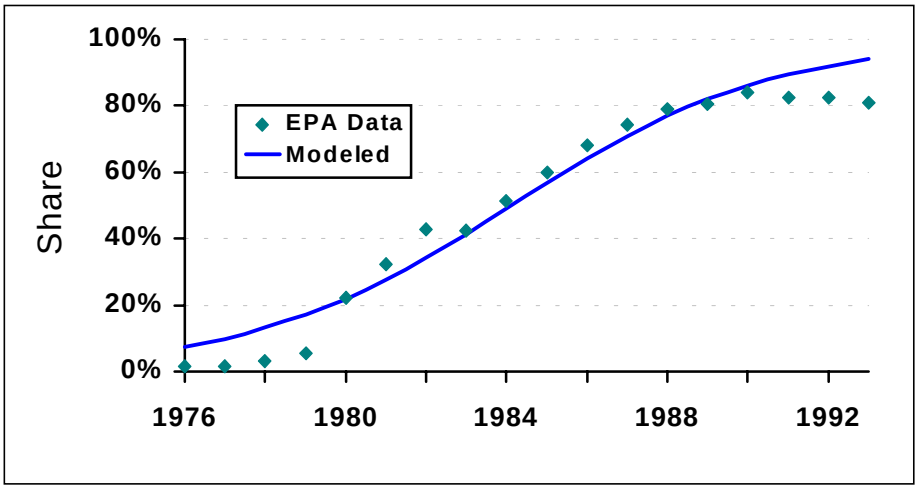
# Structure of IMPACTT5 Model

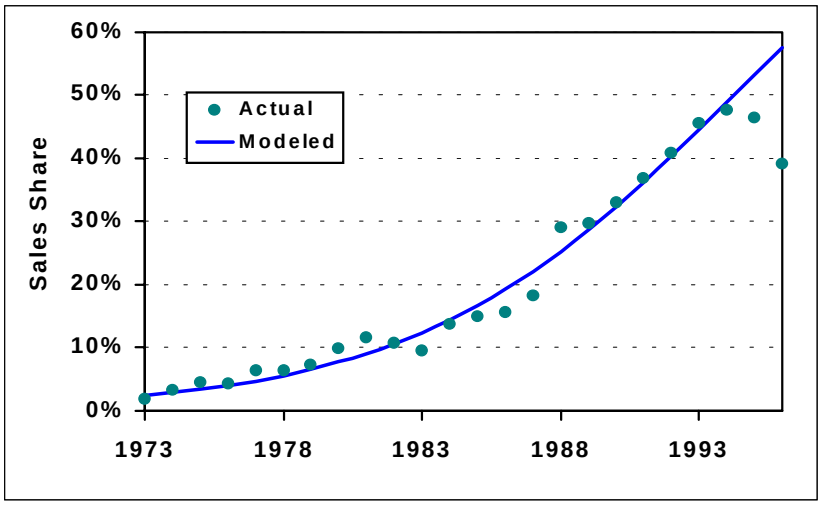





# Market Share of Front-Wheel Drive Autos in the United States



## Market Share of New Diesel Cars in France, 1976-1996

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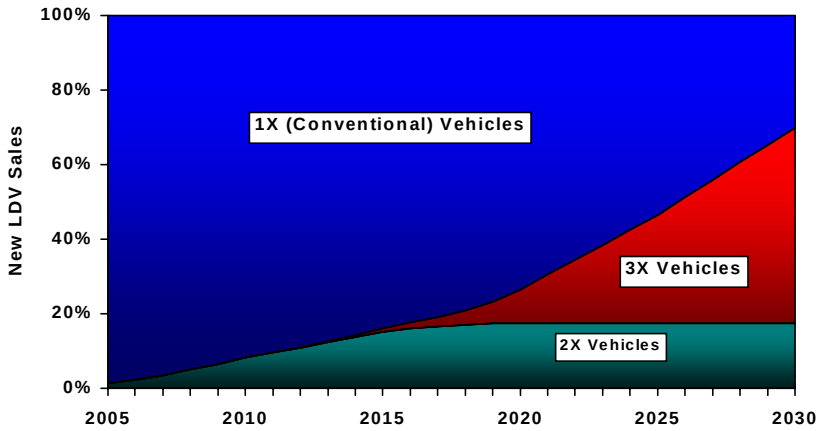
## The 2X-Transition Scenario Has Fewer 3X Vehicles But More Advanced Vehicles

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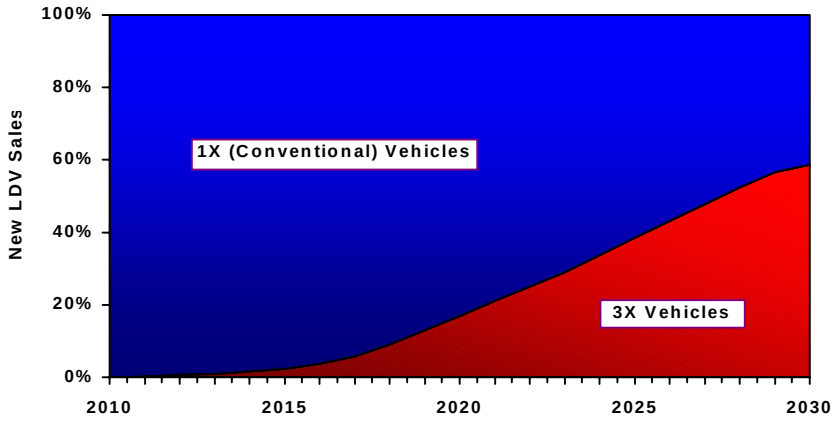
# Advanced Vehicles Achieve a 60% Market Share in the 3X-Only Scenario

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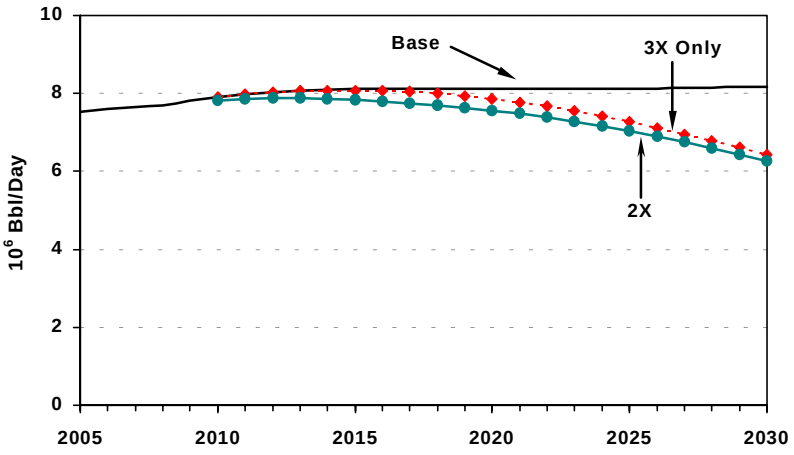
# Petroleum Savings from Early Introduction of 2X Vehicles

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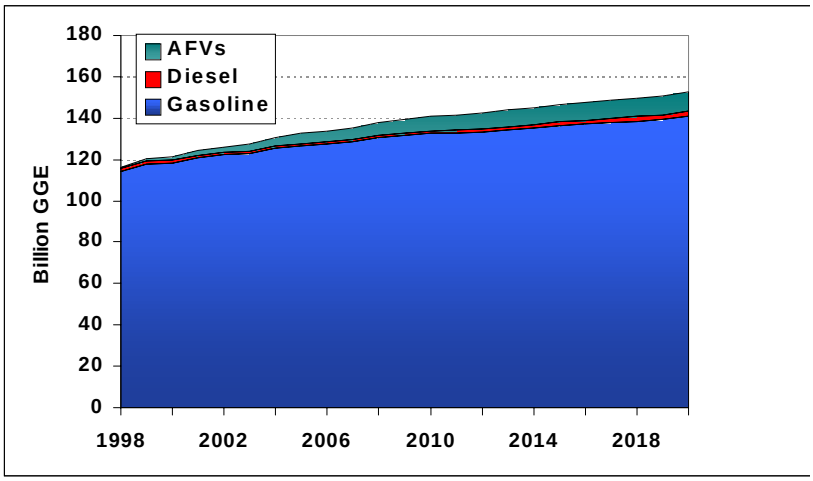
# Automotive Fuel Use in AEO-2000

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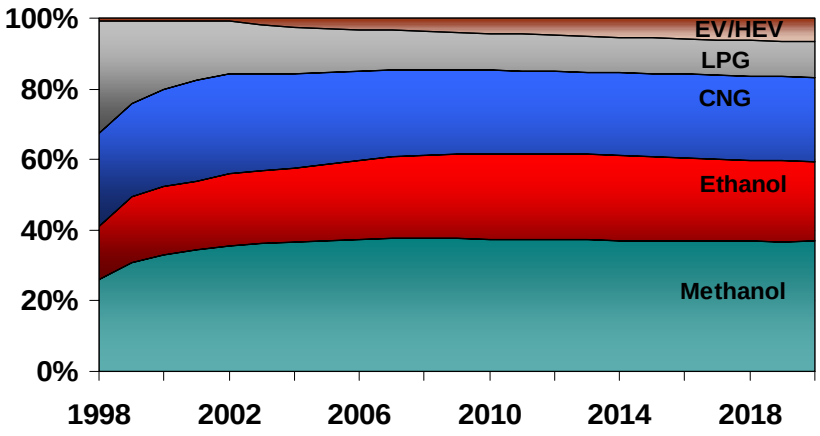
# Alternative Fuel Shares in AEO-2000

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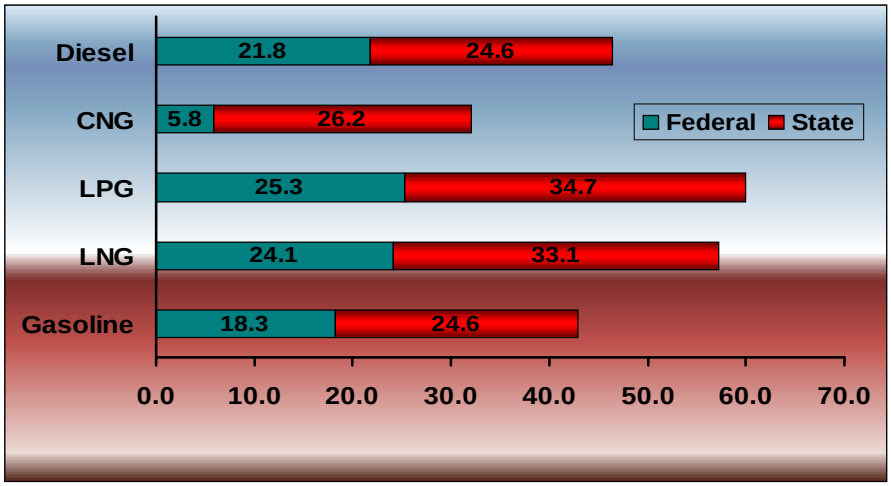
# Illinois Motor Fuel Tax Rates by Fuel Type (cents/gge)

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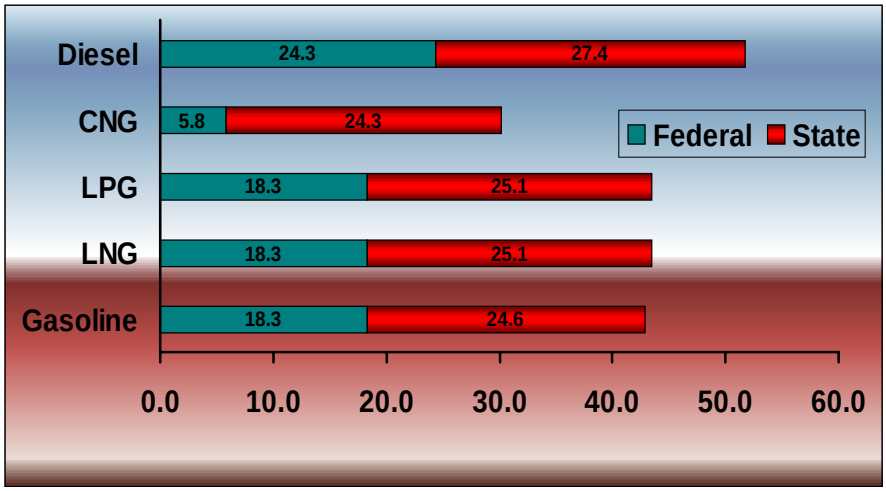


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## Manufacturers are increasingly serious about advanced technology

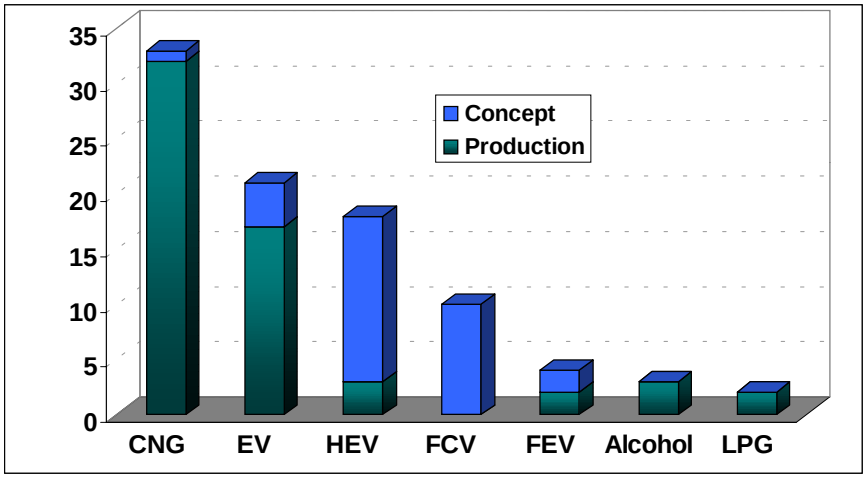
- In 1998, the “top 10” automakers spent an estimated $1.8 billion on “clean energy” vehicles; governments spent over $0.5 billion
- Today, 97 “clean energy” models are in production, demonstration or concept stage



## To compete in a world market, manufacturers may have no choice

- European automakers will cut green-house gas emissions by 25% by 2008
- Japanese fuel economy standards will rise by 23% by 2010
- Ford will increase the fuel economy of its SUVs by 25% in five years

## Most current “clean energy” vehicles are CNG; most concepts are FCVs & HEVs






## Some Conclusions

- Excluding renewables, alternative fuels have not been a key factor in motor-fuel tax revenues
- Hybrid and fuel cell vehicles are on the horizon
- Technological substitution is neither rapid nor necessarily complete
- Conventional vehicles will continue to comprise the bulk of the vehicle fleet
- In the long term, higher fuel economy will require increases in tax rates or a shift to alternative revenue sources